

## Patent Claims

5 1. Cooling air supply system (10) for an aircraft for the supply of cooling air from the aircraft surrounds to at least two devices requiring cooling air (38, 44, 56) within the aircraft, with an air inlet (12), an air channel (16) communicating with the air inlet (12) and an air distribution device (30, 32, 34) for the distribution of air to at least two devices requiring cooling air (38, 44, 56), whereby the air inlet (12) is  
10 proportioned in such a way, that it covers the maximum cooling air requirement of at least two devices requiring cooling air (38, 44, 56).

15 2. Cooling air supply system (10) in accordance with claim 1, characterised in that the air inlet is in the form of an NACA air inlet (12) in an outer skin (14) of the aircraft.

20 3. Cooling air supply system (10) in accordance with claim 1 or 2, characterised in that the air channel communicating with the air inlet (12) has a diffuser (16).

25 4. Cooling air supply system (10) in accordance with claim 3, characterised in that there is at least one air compressor (26), preferably a ventilator, in the diffuser (16) or in one of the first bypass lines (20) leading off from the diffuser (16).

30 5. Cooling air supply system (10) in accordance with claim 4, characterised in that the air compressor (26) is electrically powered or in the form of a turbo-compressor.

35 6. Cooling air supply system (10) in accordance with any of the claims 3 to 5, characterised in that a check valve (22) is provided in the diffuser (16) or in one of the second bypass lines (18) leading off from the diffuser (16), which prevents the cooling air from flowing back into the diffuser (16).

7. Cooling air supply system (10) in accordance with claim 6, characterised in that the first bypass line (20) and the second bypass line (18) are arranged in parallel.

8. Cooling air supply system (10) in accordance with any of the claims 3 to 7, characterised in that a cooling air collection chamber (28) joins onto the diffuser (16), preferably following the parallel arrangement of the first and second bypass line (20, 18).

9. Cooling air supply system (10) in accordance with claim 8, characterised in that there is at least one cooling air supply line (30, 32, 34) positioned between the cooling air collection chamber (28) and each of the devices requiring cooling air (38, 44, 56).

10. Cooling air supply system (10) in accordance with claim 9, characterised in that the cooling air supply line (30, 32, 34) is provided with a throttle device (36, 39, 54), preferably with a shutter.

11. Cooling air supply system (10) in accordance with any one of the previous claims, characterised in that a pack bay ventilation system is the device requiring cooling air (38).

12. Cooling air supply system (10) in accordance with any one of the previous claims, characterised in that an unpressurized bay ventilation system (UBV) is the device requiring cooling air (38).

13. Cooling air supply system (10) in accordance with any of the previous claims, characterised in that an on board oxygen generation system (OBOGS) (44) is the device requiring cooling air.

14. Cooling air supply system (10) in accordance with any one of the previous claims, characterised in that an on board inert gas generation system (OBIGGS) is the device (56) requiring cooling air.

15. Cooling air supply system (10) in accordance with any one of the previous claims,  
characterised in that the device requiring cooling air, in particular the on board  
5 oxygen generation system (OBOGS) and/or the on board inert gas generation system (OBIGGS) has a heat exchanger (44, 56) which uses the cooling air in order to eliminate heat.

16. Cooling air supply system (10) in accordance with any of the previous claims,  
10 characterised in that at least two devices requiring cooling air are connected with a common cooling air outlet (52) by means of expelled air pipes (48, 60, 50).

17. Aircraft characterised by a cooling air supply system (10) in accordance with  
15 any of the previous claims.